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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/785,884	02/15/2001	Amit Phadnis	CSCO-002 (CPOL 94701)	4202
86421	7590	07/29/2010		
Patent Capital Group - Cisco				
6119 McCommas				
Dallas, TX 75214				
EXAMINER				
CHANKONG, DOHM				
ART UNIT		PAPER NUMBER		
2452				
NOTIFICATION DATE		DELIVERY MODE		
07/29/2010		ELECTRONIC		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary**Application No.**

09/785,884

Applicant(s)

PHADNIS ET AL

Examiner

DOHM CHANKONG

Art Unit

2452

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 December 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 2, 5-10, 12-21, 25, 27-30, 32-37, 41, 43-50, 59, 60 and 67-85 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 8-10, 12-16, 21, 25, 27-30, 32-37, 43, 44-50, 59, 60, and 67-85 is/are rejected.
- 7) ☒ Claim(s) 5-7, 17-20 and 41 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-804)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

This non-final rejection is in response to Applicant's request for continued examination filed on 12/21/2009. Applicant amends claims 1, 2, 5, 10, 15, 17-19, 21, 25, 30, 32, 37, 41, 42, and 47, cancels claims 3, 4, 11, 22-24, 26, 31, 38-40, 43, and previously cancelled claims 51-58 and 61-66. Accordingly, claims 1, 2, 5-10, 12-21, 25, 27-30, 32-37, 41, 43, 44-50, 59, 60, and 67-85 are presented for further examination.

I. CONTINUED EXAMINATION UNDER 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12/21/2009 has been entered.

II. RESPONSE TO ARGUMENTS

Applicant amends the independent claims to recite two new limitations (1) receiving an aggregated reply packet from the peer aggregation device, wherein the aggregated reply packet indicates the status of at least some of the plurality of PPP sessions, wherein content of a local status table is updated with the status of the PPP sessions, which have the aggregation device as an endpoint; and (2) sending a proxy keep-alive reply message to one of the plurality of end systems originating a corresponding one of the keep alive-messages without waiting for the aggregated reply packet to be received.

With the exception of the limitation “wherein content of a local status table is updated with the status of the PPP sessions,” both of these limitations were already rejected in the previous rejections as set forth by the previous examiner.

1. Applicant’s arguments are not persuasive because they do not address the previous art rejections.

Applicant's arguments therefore fail to comply with 37 CFR 1.111(b) because they amount to a general allegation that the claims define a patentable invention without specifically pointing out how the language of the claims patentably distinguishes them from the references. The first “new” limitation is similar to the limitations found in claim 2 and almost identical to the limitation of cancelled claim 3. The second “new” limitation is almost identical to the limitation of cancelled claim 4.

The examiner notes that Applicant in the arguments filed on 12/21/2009 also do not address the specific citations and instead rely on the conclusory statement that Applicant “finds nothing that would be pertinent to teach teachings.”

2. Ketcham and Pereira substantively teach the first new limitation as evidenced by the rejection of claim 2 and cancelled claim 3.

Claim 2 recites “receiving said aggregated request packet in said peer aggregation device, indicating the status of said plurality of sessions in the aggregated reply packet, and sending said aggregated reply packet to said aggregation device.” Cancelled claim 3 recites “receiving in said aggregation device an aggregated reply packet from said peer aggregation device, wherein said aggregated reply packet indicates the status of at least some of said plurality of PPP sessions.”

The examiner notes that in its decision rendered on 10/23/2009, the Board of Patent Appeals and Interferences did not overturn the rejection of claims 2-4. In upholding the rejection

for claim 2, the Board stated that “we find no support for the contention that the Examiner’s proffered combination of Ketcham and Pereira would not have a reasonable expectation of success” [Board decision, Appeal 2008-005300, pg. 7, ¶3]. Applicant did not present any arguments as to claim 3 so it fell with claim 2.

Because Applicant does not point out why the cited portions of the references fail to teach the limitations as described in cancelled claim 3, Applicant’s argument is not persuasive. The examiner maintains that Pereira discloses “receiving in said aggregation device an aggregated reply packet from said peer aggregation device, wherein said aggregated reply packet indicates the status of at least some of said plurality of PPP sessions” (*Pereira*, col. 6, lines 1-6).

3. Ketcham and Pereira teach the second new limitation as evidenced by the rejection of cancelled claim 4.

In upholding the rejection of claim 4, the Board stated that Applicant did not specifically address the prior art citations set forth in the rejection. Because Applicant does not point out why the cited portions of the references fail to teach the limitations as described in cancelled claim 4, Applicant’s argument is not persuasive. The examiner maintains that Pereira discloses the step of “sending from said aggregation device a proxy keep-alive reply message to one of said plurality of end systems originating a corresponding one of said keep alive-messages without waiting for said aggregated reply packet” (*Pereira*, column 5, lines 45-47).

4. The rejection submits a new reference to disclose the limitation of “wherein content of a local status table is updated with the status of the PPP sessions, which have the aggregation device as an endpoint.”

The limitation does introduce a new limitation not found in either claims 3 and 4. Applicant's arguments are moot in view of the new ground of rejection to address to this new limitation.

III. SPECIFICATION

The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: the specification does not provide antecedent basis for “computer readable medium” as claimed in claims 37, 41, 42, 44-46, 73-75, 84, and 85. The specification only describes the use of a “memory medium.” Applicant should amend the claim to recite the term that is supported by the specification.

IV. ALLOWABLE SUBJECT MATTER

Claims 5-7, 17-20, and 41 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

V. CLAIM REJECTIONS - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

A. Claims 37, 41, 42, 44-46, 73-75, 84, and 85 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claims 37, 41, 42, 44-46, 73-75, 84, and 85 are directed to a computer readable medium. As noted above, Applicant’s specification provides no description for this term and therefore the term is given its broadest reasonable interpretation. The broadest reasonable interpretation of

"computer readable medium" typically covers forms of non-transitory tangible media as well as transitory propagating signals *per se*.

Applicant may generally overcome this interpretation by clearly defining what is meant by "medium" and limiting the term to only non-transitory embodiments. However, merely providing examples (e.g., "medium may include memory, floppy disks, RAM, ROM...") is not the same as limiting the interpretation to particular embodiments.

To overcome this rejection, Applicant should amend the claim to include the term "non-transitory" so as to insure that the medium is interpreted to include only statutory embodiments of a medium. However, as the claims are currently written, the "medium" may be interpreted as including both statutory and non-statutory embodiments and therefore is rejected under § 101.

VI. CLAIM REJECTIONS - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

- A. Claims 1, 10, 15, 21, 25, 30, 37, 42, and 47 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.**

Claims 1, 10, 15, 21, 25, 30, 37, 42, and 47 lack proper antecedent basis for the term "the status". For example, claim 1 refers to "the status of a corresponding PPP session," "the status of said PPP sessions," "the status of at least some of the plurality of PPP sessions," and "the status of the PPP sessions." Claim 1 alone seems to refer to four different "statuses." If this is the case, then Applicant should use the traditional nomenclature for differentiating between the different "statuses" (e.g., a first status, a second status, etc...). If however they are referring to

the same status, then Applicant should amend the claim to provide more clarity. Similar remarks apply to the other independent claims.

Claims 42 is also rejected for containing confusing claim language. The new limitation which starts with “receiving an aggregated reply packet from the peer aggregation device...” is confusing because of the term “an aggregated reply packet.” There is already an “aggregated reply packet” claimed in the previous limitations. Therefore, it is unclear whether the term in the new limitation is intended to refer to the same aggregated packet or a second packet.

Appropriate correction is required.

VII. CLAIM REJECTIONS - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

A. Claims 1, 2, 8-10, 14-16, 21-23, 25, 29, 30, 35-37, 42, 46-50, 59, 60, 69, 72, 75, and 78-85 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Ketcham* (U.S. Patent Number 6,721,334) in view of *Pereira* (U.S. Patent Number 5,781,726), in further view of *Elliot*, U.S. Patent No. 6,775,709.

Claims 1, 21, and 37

Ketcham as modified by *Pereira* and *Elliot* discloses a method of processing a plurality of keep-alive messages generated by a corresponding plurality of end systems, each of said plurality of keep-alive messages being designed to request the status of a corresponding point to point (PPP) session implemented on a communication network, said method comprising:

receiving in an aggregation device (*Ketcham*, figure 4, item 308) said plurality of keep-alive messages (*Pereira*, column 4, lines 31-34);

generating in said aggregation device an aggregated request packet which includes data indicating that the status of said PPP sessions is requested (*Ketcham*, column 7, line 62 through column 8, line 4, wherein the aggregated packet contains poll requests as disclosed by *Pereira*);

sending said aggregated request packet to a peer aggregation device (*Ketcham*, figure 4, item 314);

receiving an aggregated reply packet from said peer aggregation device, wherein the aggregated reply packet indicates the status of at least some of said plurality of PPP sessions (*Pereira*, column 6, lines 1-6), wherein content of a local status table is updated with the status of the PPP sessions, which have the aggregation device as an endpoint [*Elliot*, column 4 «lines 9-16» | column 5 «lines 15-22»: combining plural status messages into a single update message that is broadcast to other routers where the router is an endpoint of the link (i.e., session) to another router where each router represents an aggregation device which update their local routing tables]; and

sending from said aggregation device a proxy keep-alive reply message to one of said plurality of end systems originating a corresponding one of said keep alive-messages without waiting for said aggregated reply packet (*Pereira*, column 5, lines 45-47).

As noted above, although *Ketcham* describes a system in which different types of data packets can be aggregated together, he did not explicitly disclose (1) the use of a keep-alive message or poll request; (2) receiving an aggregated reply packet from said peer aggregation device, wherein the aggregated reply packet indicates the status of at least some of said plurality

of PPP sessions; (3) wherein content of a local status table is updated with the status of the PPP sessions, which have the aggregation device as an endpoint; and (4) sending from said aggregation device a proxy keep-alive reply message to one of said plurality of end systems originating a corresponding one of said keep alive-messages without waiting for said aggregated reply packet. However, all four features were well known in the art at the time of Applicant's invention as evidenced by Pereira and *Elliot*.

1. Pereira discloses the first, second, and fourth missing limitations.

Pereira's system is focused on the polling of point-to-point devices and explicitly states the use of a poll request from a first to a second end system and a poll response from the second to the first end system. *Pereira* further discloses receiving an aggregated reply packet from said peer aggregation device, wherein the aggregated reply packet indicates the status of at least some of said plurality of PPP sessions and sending a proxy keep-alive reply message to one of said plurality of end systems originating a corresponding one of said keep alive-messages without waiting for said aggregated reply packet.

It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the system of *Ketcham* by adding the ability to use keep-alive messages as the data packets as provided by *Pereira*. Here the combination would satisfy the need for an improved connection oriented protocol for systems that maintain a number of end users that share a common link. See *Pereira*, column 4, lines 12-17.

2. *Elliot* discloses the third missing limitation.

Elliot discloses updating a topology map which is similar to a status table representing the status of sessions between routers in the network. *Elliot* further discloses a router that

combines all status messages into a single update message which is then sent to all other link-connected routers which then update their local routing databases (i.e., table). It would have been obvious to one of ordinary skill in the art to have modified Ketcham's system to include the update message aggregation feature taught by *Elliot*. One would have been motivated to modify Ketcham in this manner because *Elliot* discloses that combining the updates into a single message speeds up propagation of the network information [column 7 «lines 34-37»].

As to claims 21 and 37, they are merely claims to an aggregation device and medium that implement the steps of the method of claim 1. Claims 21 and 37 are rejected for at least the same reasons set forth above.

This rationale also applies to the independent and dependent claims utilizing the same combination.

Claim 2

Ketcham as modified by *Pereira* and *Elliot* discloses the method of claim 1, further comprising:

receiving said aggregated request packet in said peer aggregation device (*Ketcham*, column 8, lines 15-22);

indicating the status of said plurality of sessions in the aggregated reply packet (*Pereira*, column 6, lines 1-6, wherein *Pereira*'s response polls may be aggregated at *Ketcham*'s router 314); and

sending said aggregated reply packet to said aggregation device (*Ketcham*, figure 4, inherently data packets can also flow from router 314 to router 308).

Claim 8

Ketcham as modified by *Pereira* and *Elliot* discloses the method of claim 1, wherein said communication network is implemented using one of frame relay, ATM and IP networks (*Ketcham*, column 1, lines 33-48).

Claim 9

Ketcham as modified by *Pereira* and *Elliot* discloses the method of claim 1, wherein said aggregation device is one of a network access server and home gateway (*Ketcham*, column 4, lines 37-43).

Claims 10 and 25

Ketcham as modified by *Pereira* and *Elliot* discloses a method of processing an aggregated request packet in an aggregation device, wherein said aggregated request packet is received from a peer aggregation device and indicates that the status of a plurality of point-to-point sessions is requested, said method comprising:

examining said aggregated request packet to determine that the status of said plurality of point-to-point sessions is requested (*Ketcham*, column 8, lines 15-22, wherein the aggregated packet contains the poll requests as disclosed by *Pereira*);

determining the status of each of said plurality of point-to-point sessions (*Pereira*, column 6, lines 1-6 and 50-55);

generating an aggregated reply packet indicating the status of said plurality of point-to-point sessions (*Pereira*, column 6, lines 1-6, wherein *Pereira*'s response polls may be aggregated at *Ketcham*'s router 314); and

sending said aggregated reply packet to said peer aggregation device (*Ketcham*, figure 4, inherently data packets can also flow from router 314 to router 308), wherein the aggregated reply packet indicates the status of at least some of the plurality of PPP sessions (*Pereira*, column 6, lines 1-6), wherein content of a remote status table is updated with the status of the PPP sessions, which have the peer aggregation device as an endpoint [*Elliot*, column 4 «lines 9-16» | column 5 «lines 15-22»: combining plural status messages into a single update message that is broadcast to other routers where the router is an endpoint of the link (i.e., session) to another router where each router represents an aggregation device which update tables remote from the routers], and wherein a proxy keep-alive reply message is sent to one of the plurality of end systems originating a corresponding one of the keep alive-messages without waiting for the aggregated reply packet to be received [*Pereira*, column 5, lines 45-47].

See rejection of claim 1 for reasons to combine *Ketcham* with *Pereira* and *Elliot*.

As claim 25 is merely a claim to an aggregation device that implements the steps of the method of claim 10, claim 25 is rejected for at least the same reasons set forth above.

Claim 14

Ketcham as modified by *Pereira* and *Elliot* discloses the method of claim 10, wherein said aggregation device comprises one of a network access server (NAS) and a home gateway implemented in a communication network (*Ketcham*, column 4, lines 37-43).

Claim 15

Ketcham as modified by *Pereira* and *Elliot* discloses an aggregation device for processing a plurality of keep-alive messages generated by a corresponding plurality of end systems, each of said plurality of keep-alive messages being designed to request the status of a

corresponding point to point (PPP) session implemented on a communication network, said aggregation device comprising:

an input interface receiving said plurality of keep-alive messages (Ketcham, figure 4, item 308 and Pereira, column 4, lines 31-34);

a message aggregator coupled to said input interface, said message aggregator examining said plurality of message and generating data according to a format indicating that the status of said PPP sessions is requested (Ketcham, column 7, line 62 through column 8, line 4, wherein the aggregated packet contains the poll requests as disclosed by Pereira); and

an output interface sending an aggregated request packet on said communication network to a peer aggregation device, said aggregated request packet containing said data generated by said message aggregator (Ketcham, figure 4, item 314), wherein the aggregation device is further configured to receive an aggregated reply packet from the peer aggregation device [Ketcham, column 8, lines 15-22], wherein the aggregated reply packet indicates the status of at least some of the plurality of PPP sessions [Pereira, column 6, lines 1-6]), wherein content of a remote status table is updated with the status of the PPP sessions, which have the peer aggregation device as an endpoint [Elliot, column 4 «lines 9-16» | column 5 «lines 15-22»: combining plural status messages into a single update message that is broadcast to other routers where the router is an endpoint of the link (i.e., session) to another router where each router represents an aggregation device which update tables remote from the routers], and wherein a proxy keep-alive reply message is sent to one of the plurality of end systems originating a corresponding one of the keep alive-messages without waiting for the aggregated reply packet to be received [Pereira, column 5, lines 45-47].

See rejection of claim 1 for reasons to combine *Ketcham* with *Pereira* and *Elliot*.

Claim 16

Ketcham as modified by *Pereira* and *Elliot* discloses the aggregation device of claim 15, further comprising an encapsulator encapsulating said data in a packet suitable for transmission on said communication network (*Pereira*, column 2, lines 19-25, wherein encapsulation is inherent to PPP).

Claim 22

Ketcham as modified by *Pereira* and *Elliot* discloses the aggregation device of claim 21, further comprising second means for receiving an aggregated reply packet from said peer aggregation device (*Ketcham*, figure 4, inherently data packets can also flow from router 314 to router 308), wherein said aggregated reply packet indicates the status of at least some of said plurality of PPP sessions (*Pereira*, column 6, lines 1-6).

Claim 23

Ketcham as modified by *Pereira* and *Elliot* discloses the aggregation device of claim 22, further comprising means for sending a proxy keep-alive reply message to one of said plurality of end systems originating a corresponding one of said keep alive-messages without waiting for said aggregated reply packet (*Pereira*, column 5, lines 45-47).

Claim 29

Ketcham as modified by *Pereira* and *Elliot* discloses the aggregation device of claim 25, wherein said aggregation device comprises one of a network access server (NAS) and a home gateway implemented in a communication network (*Ketcham*, column 4, lines 37-43).

Claim 30

Ketcham as modified by *Pereira* and *Elliot* discloses an aggregation device for processing an aggregated request packet, wherein said aggregated request packet is received from a peer aggregation device and indicates that the status of a plurality of point-to-point sessions are requested, said aggregation device comprising:

an input interface receiving said aggregated request packet (*Ketcham*, figure 4, item 314, wherein the aggregated packet contains the poll requests as disclosed by *Pereira*);

a de-encapsulator examining said aggregated request packet to determine that the status of said plurality of point-to-point sessions is requested (*Ketcham*, column 8, lines 15-22);

a reply generator determining the status of each of said plurality of point-to-point sessions, and generating an aggregated reply packet indicating the status of each of said plurality of point-to-point sessions (*Pereira*, column 6, lines 1-6, wherein *Pereira*'s response polls may be aggregated at *Ketcham*'s router 314); and

an output interface sending said aggregated reply packet to said peer aggregation device (*Ketcham*, figure 4, inherently data packets can also flow from router 314 to router 308), wherein content of a remote status table is updated with the status of the PPP sessions, which have the peer aggregation device as an endpoint [*Elliot*, column 4 «lines 9-16» | column 5 «lines 15-22»]; combining plural status messages into a single update message that is broadcast to other routers where the router is an endpoint of the link (i.e., session) to another router where each router represents an aggregation device which update tables remote from the routers], and wherein a proxy keep-alive reply message is sent to one of the plurality of end systems originating a

corresponding one of the keep alive-messages without waiting for the aggregated reply packet to be received [*Pereira*, column 5, lines 45-47].

See rejection of claim 1 for reasons to combine *Ketcham* with *Pereira* and *Elliot*.

Claim 35

Ketcham as modified by *Pereira* and *Elliot* the aggregation device of claim 30, further comprising a keep-alive processor coupled to said de-encapsulator, wherein said keep-alive processor examines said aggregated request packet to determine that status of point-to-point sessions is requested and causes said reply generator to generate said aggregated reply packet (*Ketcham*, column 8, lines 15-22 and *Pereira*, column 6, lines 1-6).

Claim 36

Ketcham as modified by *Pereira* and *Elliot* the aggregation device of claim 30, wherein said aggregation device comprises one of a network access server (NAS) and a home gateway implemented in a communication network (*Ketcham*, column 4, lines 37-43).

Claim 42

Ketcham as modified by *Pereira* and *Elliot* a computer-readable medium carrying one or more sequences of instructions for causing an aggregation device to process an aggregated request packet, wherein said aggregated request packet is received from a peer aggregation device and indicates that the status of a plurality of point-to-point sessions are requested, wherein execution of said one or more sequences of instructions by one or more processors contained in said aggregation device causes said one or more processors to perform the actions of:

examining said aggregated request packet to determine that the status of said plurality of point-to-point sessions is requested (*Ketcham*, column 8, lines 15-22, wherein the aggregated packet contains the poll requests as disclosed by *Pereira*);

determining the status of each of said plurality of point-to-point sessions (*Pereira*, column 6, lines 1-6 and 50-55);

generating an aggregated reply packet indicating the status of said plurality of point-to-point sessions (*Pereira*, column 6, lines 1-6, wherein *Pereira*'s response polls may be aggregated at *Ketcham*'s router 314);

sending said aggregated reply packet to said peer aggregation device (*Ketcham*, figure 4, inherently data packets can also flow from router 314 to router 308);

receiving an aggregated reply packet from the peer aggregation device [*Ketcham*, column 8, lines 15-22], wherein the aggregated reply packet indicates the status of at least some of the plurality of PPP sessions [*Pereira*, column 6, lines 1-6], wherein content of a remote status table is updated with the status of the PPP sessions, which have the peer aggregation device as an endpoint [*Elliot*, column 4 «lines 9-16» | column 5 «lines 15-22»: combining plural status messages into a single update message that is broadcast to other routers where the router is an endpoint of the link (i.e., session) to another router where each router represents an aggregation device which update tables remote from the routers]; and

sending a proxy keep-alive reply message to one of the plurality of end systems
originating a corresponding one of the keep alive-messages without waiting for the aggregated reply packet to be received [*Pereira*, column 5, lines 45-47].

See rejection of claim 1 for reasons to combine *Ketcham* with *Pereira* and *Elliot*.

Claim 46

Ketcham as modified by *Pereira* and *Elliot* the computer-readable medium of claim 42, wherein said aggregation device comprises one of a network access server (NAS) and a home gateway implemented in a communication network (*Ketcham*, column 4, lines 37-43).

Claim 47

Ketcham as modified by *Pereira* and *Elliot* a communication network comprising:

a first aggregation device (*Ketcham*, figure 4, item 308) receiving a plurality of keep-alive messages (*Pereira*, column 4, lines 31-34) generated by a corresponding plurality of end systems, each of said plurality of keep-alive messages being designed to request the status of a corresponding point to point (PPP) session implemented on said communication network, said first aggregation device generating an aggregated request packet which includes data indicating that the status of said PPP sessions is requested (*Ketcham*, column 7, line 62 through column 8, line 4, wherein the aggregated packet contains the poll requests as disclosed by *Pereira*), and sending said aggregated request packet (*Ketcham*, column 7, line 62 through column 8, line 4);

and

a peer aggregation device (*Ketcham*, figure 4, item 314) receiving said aggregated request packet and indicating the status of said plurality of sessions in an aggregated reply packet (*Pereira*, column 6, lines 1-6, wherein *Pereira*'s response polls may be aggregated at *Ketcham*'s router 314), said peer aggregation packet sending said aggregated reply packet to said first aggregation device (*Ketcham*, figure 4, inherently data packets can also flow from router 314 to router 308), wherein each of said first aggregation device and said peer aggregation device is implemented as a single device (*Ketcham*, figure 4, items 308 and 314), wherein content of a

remote status table is updated with the status of the PPP sessions, which have the peer aggregation device as an endpoint [*Elliot*, column 4 «lines 9-16» | column 5 «lines 15-22»:
combining plural status messages into a single update message that is broadcast to other routers where the router is an endpoint of the link (i.e., session) to another router where each router represents an aggregation device which update tables remote from the routers], and wherein a proxy keep-alive reply message is sent to one of the plurality of end systems originating a corresponding one of the keep alive-messages without waiting for the aggregated reply packet to be received [*Pereira*, column 5, lines 45-47].

See rejection of claim 1 for reasons to combine *Ketcham* with *Pereira* and *Elliot*.

Claim 48

Ketcham as modified by *Pereira* and *Elliot* the communication network of claim 47, wherein said first aggregation device is located at an edge of said communication networks (*Ketcham*, figure 4, item 308).

Claim 49

Ketcham as modified by *Pereira* and *Elliot* the communication network of claim 48, further comprising an access network coupling said first aggregation device to said corresponding plurality of end systems, wherein said plurality of keep-alive messages are received on said access network (*Ketcham*, figure 4, item 106).

Claim 50

Ketcham as modified by *Pereira* and *Elliot* the communication network of claim 49, wherein said first aggregation device and said peer aggregation device respectively comprise a network access server (NAS) and a home gateway (*Ketcham*, column 4, lines 37-43).

Claim 59

Ketcham as modified by *Pereira* and *Elliot* the method of claim 1, wherein said aggregation device is physically separate from said plurality of end systems (*Ketcham*, figure 4, item 308).

Claim 60

Ketcham as modified by *Pereira* and *Elliot* the method of claim 10, wherein said aggregation device is physically separate from said plurality of end systems (*Ketcham*, figure 4, item 308).

Claim 69

Ketcham as modified by *Pereira* and *Elliot* the method of claim 1, wherein each of said PPP sessions terminates at a home gateway, and wherein said aggregation device comprises a switching device and is in the path of each of said PPP sessions from a corresponding one of said plurality of end systems to said home gateway (*Ketcham*, figure 4, item 308).

Claim 72

Ketcham as modified by *Pereira* and *Elliot* the aggregation device of claim 30, wherein each of said PPP sessions terminates at a home gateway, and wherein said aggregation device comprises a switching device and is in the path of each of said PPP sessions from a corresponding one of said plurality of end systems to said home gateway (*Ketcham*, figure 4, item 314).

Claim 75

Ketcham as modified by *Pereira* and *Elliot* the computer readable medium of claim 37, wherein each of said PPP sessions terminates at a home gateway, and wherein said aggregation

device comprises a switching device and is in the path of each of said PPP sessions from a corresponding one of said plurality of end systems to said home gateway (*Ketcham*, figure 4, item 308).

Claim 78

Ketcham as modified by *Pereira* and *Elliot* the aggregation device of claim 21, wherein each of said PPP sessions terminates at a home gateway, and wherein said aggregation device comprises a switching device and is in the path of each of said PPP sessions from a corresponding one of said plurality of end systems to said home gateway (*Ketcham*, figure 4, item 308).

Claim 79

Ketcham as modified by *Pereira* and *Elliot* the method of claim 1, wherein said receiving, said generating and said sending are performed in an aggregation device implemented as a single device (*Ketcham*, figure 4, item 308).

Claim 80

Ketcham as modified by *Pereira* and *Elliot* the method of claim 10, wherein said examining, said determining, said generating and said sending are performed in said aggregation device implemented as a single device (*Ketcham*, figure 4, item 308).

Claim 81

Ketcham as modified by *Pereira* and *Elliot* the aggregation device of claim 21, wherein said means for receiving, said means for generating and said means for sending are contained in said aggregation device implemented as a single device (*Ketcham*, figure 4, item 308).

Claim 82

Ketcham as modified by *Pereira* and *Elliot* the aggregation device of claim 25, wherein said means for examining, said means for determining, said means for generating and said means for sending are implemented in said aggregation device implemented as a single device (*Ketcham*, figure 4, item 308)

Claim 83

Ketcham as modified by *Pereira* and *Elliot* the aggregation device of claim 30, wherein said input interface, said de-encapsulator, said reply generator and said output interface are contained in said aggregation device implemented as a single device (*Ketcham*, figure 4, item 308).

Claim 84

Ketcham as modified by *Pereira* and *Elliot* the computer readable medium of claim 37, wherein said receiving, said generating and said sending are performed by said aggregation device implemented as a single device (*Ketcham*, figure 4, item 308).

Claim 85

Ketcham as modified by *Pereira* and *Elliot* the computer readable medium of claim 42, wherein said examining, said determining, said generating and said sending are performed by said aggregation device implemented as a single device (*Ketcham*, figure 4, item 308).

- B. Claims 13, 28, 32, 34, and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Ketcham, Pereira and Elliot*, further in view of *Chao et al.* (U.S. Patent Number 5,964,837) “*Chao*”.**

Claim 13

Ketcham, Pereira, Elliot and *Chao* discloses the method of claim 10, wherein said generating comprises setting a bit to one logical value to indicate that a corresponding one of said plurality of sessions is OK/alive, and to another logical value to indicate that said corresponding one of said plurality of session not OK/alive (*Chao*, column 5, lines 50-53).

Claim 28

Ketcham, Pereira, Elliot and *Chao* discloses the aggregation device of claim 25, wherein said means for generating sets a bit in said aggregated reply packet to one logical value to indicate that a corresponding one of said plurality of sessions is OK/alive, and to another logical value to indicate that said corresponding one of said plurality of session not OK/alive (*Chao*, column 5, lines 50-53).

Claim 32

Ketcham, Pereira, Elliot and *Chao* discloses the aggregation device of claim 31, further comprising a session manager updating the status of said plurality of point-to-point sessions in said local status table (*Chao*, column 7, lines 64-66).

Claim 34

Ketcham, Pereira, Elliot and *Chao* discloses the aggregation device of claim 30, wherein said reply generator sets a bit in said aggregated reply packet to one logical value to indicate that a corresponding one of said plurality of sessions is OK/alive, and to another logical value to

indicate that said corresponding one of said plurality of session not OK/alive (*Chao*, column 5, lines 50-53).

Claim 45

Ketcham, Pereira, Elliot and *Chao* discloses the computer-readable medium of claim 42, wherein said generating comprises setting a bit to one logical value to indicate that a corresponding one of said plurality of sessions is OK/alive, and to another logical value to indicate that said corresponding one of said plurality of session not OK/alive (*Chao*, column 5, lines 50-53).

- C. Claims 12, 27, 33, and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Ketcham* in view of *Pereira, Elliot, and Chao*, as applied above, further in view of *Simpson* ("RFC 1661: Point-to-Point Protocol," July 1994).**

Claim 12

Ketcham, Pereira, Elliot, Chao, and *Simpson* discloses the method of claim 10, wherein said generating comprises including a client magic number associated with each of said plurality of point-to-point sessions (*Simpson*, pages 45-47).

Although the combination of *Ketcham, Pereira*, and *Chao* did not explicitly teach the use of a magic number associated with each session, *Simpson* taught a magic number for use with the point-to-point protocol. It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the combination of *Ketcham, Pereira*, and *Chao* by adding a magic number as provided by *Simpson*. Again the combination satisfies the need for an improved method of monitoring a point-to-point network. See *Chao*, column 2, lines 15-24. This rationale also applies to other similar dependent claims utilizing the same combination.

Claim 27

Ketcham, Pereira, Elliot, Chao, and *Simpson* discloses the aggregation device of claim 25, wherein said means for generating includes a client magic number associated with each of said plurality of point-to-point sessions (*Simpson*, pages 45-47).

Claim 33

Ketcham, Pereira, Elliot, Chao, and *Simpson* discloses the aggregation device of claim 30, wherein said reply generator includes in said aggregated reply packet a client magic number associated with each of said plurality of point-to-point sessions (*Simpson*, pages 45-47).

Claim 44

Ketcham, Pereira, Elliot, Chao, and *Simpson* discloses the computer-readable medium of claim 42, wherein said generating comprises including a client magic number associated with each of said plurality of point-to-point sessions (*Simpson*, pages 45-47).

D. Claims 67, 68, 70, 71, 73, 74, 76, and 77 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Ketcham* in view of *Pereira* and *Elliot*, as applied above, further in view of *Rosenberg et al.* ("An RTP Payload Format for User Multiplexing," May 1998), hereinafter referred to as *Rosenberg*.

Claim 67

Ketcham, Pereira, Elliot and *Rosenberg* discloses the method of claim 1, wherein said generating includes less data in said aggregated request packet than the data forming said plurality of keep-alive messages together (*Rosenberg*, page 2, paragraph beginning "On the other hand...").

Although the combination of *Ketcham* and *Pereira* did not explicitly state that the aggregated message contains less data than the plurality of the non-aggregated messages together, this is a well known result in message aggregation. This is evidenced by *Rosenberg*

whose system creates an aggregated message that is smaller than the sum of the original messages in order to improve packet efficiency. It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to modify the combination of *Ketcham* and *Pereira* by adding the ability for the message aggregator to generate less data in the aggregated message than the data forming the plurality of messages together as provided by *Rosenberg*. Here the combination satisfies the need for an improved connection oriented protocol for systems that maintain a number of end users that share a common link. See *Pereira*, column 4, lines 12-17. This rationale also applies to similar dependent claims utilizing the same combination.

Claim 68

Ketcham, Pereira, Elliot and *Rosenberg* discloses the method of claim 67, wherein each of said plurality of keep-alive messages contains an identifier of a corresponding PPP session, wherein said generating comprises: selecting said identifier of each of said plurality of keep-alive messages (*Rosenberg*, pages 3-5, section 2); and forming said aggregated request packet from said identifiers (*Rosenberg*, pages 3-5, section 2), whereby said aggregated request packet contains less data than said plurality of keep-alive messages together (*Rosenberg*, page 2, paragraph beginning "On the other hand...").

Claim 70

Ketcham, Pereira, Elliot and *Rosenberg* discloses the aggregation device of claim 30, wherein said reply generator includes less data in said aggregated request packet than the data forming said plurality of keep-alive messages together (*Rosenberg*, page 2, paragraph beginning "On the other hand...").

Claim 71

Ketcham, Pereira, Elliot and Rosenberg discloses the aggregation device of claim 70, wherein each of said plurality of keep-alive messages contains an identifier of a corresponding PPP session, wherein said reply generator operates to: select said identifier of each of said plurality of keep-alive messages (*Rosenberg*, pages 3-5, section 2); and form said aggregated request packet from said identifiers (*Rosenberg*, pages 3-5, section 2), whereby said aggregated request packet contains less data than said plurality of keep-alive messages together (*Rosenberg*, page 2, paragraph beginning “On the other hand...”).

Claim 73

Ketcham, Pereira, Elliot and Rosenberg discloses the computer readable medium of claim 37, wherein said generating includes less data in said aggregated request packet than the data forming said plurality of keep-alive messages together (*Rosenberg*, page 2, paragraph beginning “On the other hand...”).

Claim 74

Ketcham, Pereira, Elliot and Rosenberg discloses the computer readable medium of claim 73, wherein each of said plurality of keep-alive messages contains an identifier of a corresponding PPP session, wherein said generating comprises: selecting said identifier of each of said plurality of keep-alive messages (*Rosenberg*, pages 3-5, section 2); and forming said aggregated request packet from said identifiers (*Rosenberg*, pages 3-5, section 2), whereby said aggregated request packet contains less data than said plurality of keep-alive messages together (*Rosenberg*, page 2, paragraph beginning “On the other hand...”).

Claim 76

Ketcham, Pereira, Elliot and Rosenberg discloses the aggregation device of claim 21, wherein said means for generating includes less data in said aggregated request packet than the data forming said plurality of keep-alive messages together (*Rosenberg*, page 2, paragraph beginning “On the other hand...”).

Claim 77

Ketcham, Pereira, Elliot and Rosenberg discloses the aggregation device of claim 76, wherein each of said plurality of keep-alive messages contains an identifier of a corresponding PPP session, wherein said means for generating operates to: select said identifier of each of said plurality of keep-alive messages (*Rosenberg*, pages 3-5, section 2); and form said aggregated request packet from said identifiers (*Rosenberg*, pages 3-5, section 2), whereby said aggregated request packet contains less data than said plurality of keep-alive messages together (*Rosenberg*, page 2, paragraph beginning “On the other hand...”).

VIII. CONCLUSION

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DOHM CHANKONG whose telephone number is (571)272-3942. The examiner can normally be reached on Monday to Friday [10 am - 6 pm].

If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, Thu Nguyen can be reached on (571)272-6967. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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/DOHM CHANKONG/
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